

Application Number: 10/810,296
Art Unit: 1631

Page 35

CLAIM

1 I claim:

1. A multiparameter method of screening for the diagnosis, the prevention or the treatment of atherosclerosis-related coronary heart disease (CHD) or stroke comprising;

5 defining the disease as atherosclerosis-related CHD or stroke;

defining the normal as free from said disease;

defining the following parameters as

10 atherosclerotic parameters consisting of c = the Low-density lipoprotein (LDL) concentration parameter in mg/dL or c = the C-reactive protein (CRP) concentration parameter in mg/L, p = the blood systolic pressure parameter in mmHg or p = the blood diastolic pressure parameter in mmHg, f = the heart rate parameter in s^{-1} , a = the radius parameter in arterial radius in cm, T = the temperature parameter of blood plasma in $^{\circ}\text{C}$, α = the angle parameter between the gravity and mean velocity of blood fluid in arterial vessels in degree and z = the length parameter of diffusion flux along the inner wall in the axial direction

Application Number: 10/810,296
 Art Unite: 1631

Page 36

of arterial vessels in cm;

an individual having the measured values of said
 atherosclerotic parameters of the following
 25 expressions:

$$J = A c^{\frac{11}{9}} (v^3 D^{16})^{\frac{1}{27}} \left(\frac{g \cos \alpha + fu}{z} \right)^{\frac{2}{9}} \quad (1.1)$$

or

$$J = B c^{\frac{11}{9}} p^{\frac{1}{3}} T^{\frac{16}{27}} a^{\frac{2}{3}} f^{\frac{2}{9}} z^{-\frac{2}{9}} \quad (1.2)$$

and

$$30 \quad J = E c^{\frac{11}{9}} D^{\frac{16}{27}} z^{-\frac{2}{9}} (\cos \alpha)^{\frac{2}{9}} \quad (1.3)$$

wherein J = the mass transfer flux in 10^{-5} g/(cm²s),
 A, B and E = the constants of conversion factors,
 v = the eddy velocity of blood fluid in arterial
 vessels in cm/s, u = the mean velocity of the
 35 blood fluid in cm/s, D = the diffusion coefficient
 in cm²/s and g = the gravitational acceleration in
 cm/s²;

providing the normal values of said atherosclerotic
 parameters;

40 determining the disease risks yielded by the
 differences between said measured values and said
 normal values of said atherosclerotic
 parameters;

adding all said disease risks together yields a

Application Number: 10/810,296
Art Unit: 1631

Page 37

prevent or to treat atherosclerosis-related CHD or stroke; and

70 above-mentioned said methods are written as an executable computer program named the MMA.exe to be installed into a general purpose digital computer device to accomplish said methods.

2. A method as in claim 1 wherein determining said 75 disease risk yielded by the difference between the measured value and the normal value of said LDL concentration parameter, said method comprising the steps of:

80 a measured value, c_m in mg/dL, of the individual's LDL concentration in human serum is determined using a medical technique for measuring the concentration of blood constituents or said c_m is determined by the physician;

85 a normal value, c_n in mg/dL, of said LDL concentration is determined by the physician or said $c_n = 100$ mg/dL for adult;

substituting said c_m and said c_n into the following expression where $c_m \geq c_n$:

$$R_1 = \left(\frac{c_m}{c_n} \right)^{\frac{11}{9}} - 1 \quad (1)$$

Application Number: 10/810,296
Art Unit: 1631

Page 38

disease in claim 11 so as to yield said relative ratio as a therapeutic efficacy of said disease.

17. A method as in claim 1 wherein repeating said 340 method in claim 2 through said method in claim 16 until said disease risk level in claim 12 is reduced to a normal level for said individual who requires the therapy to prevent or to treat atherosclerosis-related CHD or stroke.

345 18. A method as in claim 1 wherein said method in claim 2 through said method in claim 16 are written as an executable computer program named the MMA.exe to be installed into a general purpose digital computer device to accomplish said methods comprising;

350 inputting the currently measured values, the previously measured values and the normal values Of the individual's atherosclerosis parameters into the input screen of said MMA.exe;

pressing the "update" button and the "calc. risk" 355 button of said input screen; and

pressing the "evaluate" button so as to yield the screening results containing a total risk of said disease, a primary cause in said disease, a primary therapy target of said disease, a